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AUTHOR Acharya, Lalit
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ABSTRACT

Multiple discriminant analysis was used to analyze the structure of a perceived environmental uncertainty variable employed previously in research on public relations roles. Data came from a subset (N=229) of a national sample of public relations practitioners belonging to the Public Relations Society of America, who completed a set of scaled items measuring the simple-complex dimension (the number of factors perceived as relevant to decision-making behavior) and static-dynamic dimension (the degree to which these important factors are seen as stable) of the work environment. An additional question was used to break down the sample into four role model categories: (1) expert, (2) technical services provider, (3) communication process facilitator, and (4) problem solving process facilitator. Overall, it was shown that the multiple discriminant analysis technique unearthed a hitherto hidden dimension of "threat" in the public relations practitioner's environment. The static-dynamic dimension, although altered by the analysis, appeared to be valid for describing this environment. Practitioners did not seem to evaluate their environments along the simple-complex dimension. (FL)

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Public Relations Division

PRACTITIONER REPRESENTATIONS OF ENVIRONMENTAL UNCERTAINTY: AN APPLICATION OF DISCRIMINANT ANALYSIS

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By

Lalit Acharya
School of Journalism and Mass Communication
and
Cancer Prevention Program
University of Wisconsin-Madison
Madison, Wisconsin 53706

(608) 263-6919

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Presented to the Public Relations Division at the Annual Convention of the Association for Education in Journalism and Mass Communication (AEJMC), Corvallis, Oregon State, on August 7, 1983.

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Lalit Acharya
School of Journalism and Mass Communication
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ABSTRACT

This paper uses the multiple discriminant analysis technique to analyze the structure of a perceived environmental uncertainty variable used in earlier research on public relations roles. Findings show that while perceptions of change are important to PR practitioners for interpreting their professional environment, perceptions of complexity of environment are not. Instead, the practitioners appear to evaluate their work environment along a threat/non-threat dimension.

This is primarily a methodological paper.

(This research supported by grants to Glen M. Broom, Associate Professor, San Diego State University, from the Foundation for Public Relations Research and Education, and the University of Wisconsin Graduate School.)

Presented to the Public Relations Division, Association for Education in Journalism and Mass Communication (AEJMC), at Corvallis, Oregon State, on August 7, 1983.

Recent research has shown that any of five role models can be used to describe the behavior of public relations practitioners. They are: expert prescriber, an authoritarian and prescriptive model; communication technician, a supportive, skills-oriented model; communication facilitator, a liaison model; problem-solving process facilitator, a confrontational model; and acceptant legitimizer, a "yes-man" model.[1] This research does not explain why, and under what conditions behaviors associated with the role models occur.

Acharya addressed the question of role causation by investigating the concept of perceived environmental uncertainty as a predictor of the role models.[2] The underlying assumption was that practitioners -- who spend a major part of their work lives interacting with their organizations' environment -- should be strongly influenced by their subjective perceptions of this environment. The acceptant legitimizer model was excluded from this investigation because it was not measured in the data set used for analysis.

When tested, the perceived environmental uncertainty variable successfully predicted to communication technician and problem-solving process facilitator role behaviors. It did not make any difference to the enactment of the expert prescriber and communication facilitator roles.

Two conclusions can be drawn from these findings. One is to accept the perceived environmental uncertainty variable's inability to discriminate between the expert and communication facilitator role models as a true finding. The other would be that the operationalization of the uncertainty variable is an inadequate representation of the public relations practitioner's environment.

Given the second of the two conclusions, would it be possible to analyze

the structure of the uncertainty variable to determine:

a) Whether the environmental dimensions used in the uncertainty variable apply to public relations practitioners?

b) Whether, and which of the items measuring the environmental dimensions of the uncertainty variable discriminate as predicted between the role models?

c) And to provide indicators for a more efficient construction of the uncertainty variable.

This study uses multiple discriminant analysis -- a heuristi that has alternately been used to test theory and for producing theoretically useful constructs -- to provide some answers to the above questions.

The original uncertainty study is described in some detail to enable the reader to meaningfully interpret the findings of the discriminant analysis.

Perceived Environmental Uncertainty

Open systems theorists argue that organizations are homeostatic, varying their structures and operations in accordance with "contingencies" or influences in their environments.[3] A key focus of this research has been upon the variable of environmental uncertainty.[4]

Uncertainty has been defined as a state of mind that exists when, "an individual finds himself engaging in behavior based on less than complete knowledge of his existing (or future) relationship with the environment."[5] Such a state is characterized by doubts about the causal relationship between different elements in the person's decision environment. The individual is also unable to predict how environmental factors are going to affect the outcome, particularly success, of his decisions.

Research findings indicate that environmental uncertainty is best studied with reference to the behavioral environment than by reference to the physical or objective environment.[6] There is also evidence that perceptions of

environmental uncertainty are mediated by the variables of education and experience.[7]

Duncan points out that most environments can be ordered along two dimensions, namely simple-complex and static-dynamic. He operationalizes the simple-complex dimension as the number of factors in the environment that an individual perceives to be relevant for and important to his decision-making behavior. The more the factors, the more complex is his environment. The static-dynamic dimension is operationalized as the degree to which these relevant and important environmental factors are perceived to remain stable, or be in a state of change.[8] When crossed, the two dimensions yield four environment types. These are: simple-static environment, where factors important to the decision process are relatively few and stable; complex-static environment, where the factors are numerous yet stable; simple-dynamic environment, where the factors are few but perceived to be in a state of change; and complex-dynamic environment, where the factors are many, and in a state of change.

Empirical evidence shows that simple and static environments produce least uncertainty, while complex and dynamic environments produce the most. The other two are intermediate environments, of which simple and dynamic environments produce greater uncertainty than do complex and static environments. Duncan concludes that the static-dynamic dimension of environment is the more important contributor to perceptions of environmental uncertainty.[9]

Acharya used 16 items relevant to a PR practitioner's decision behavior to create an index for the simple-complex dimension of environment. The items, which included internal publics such as union officials, external publics such as consumers, and commercial intelligence factors such as economic trends, were measured on a five-point scale of (1) never important, to (5) always important. Respondent scores on the items were summed and averaged to yield a mean complexity score, higher scores indicating more complex environments. Reliability coefficient (Cronbach's alpha) for this index was 0.73.

The same 16 items were measured on a scale of (1) never changes, to (5) always changes, to create the index for the static-dynamic dimension of environment. Respondent scores on these items were also summed and averaged to yield a mean change score, higher scores indicating more dynamic environments. Cronbach's alpha for this index was 0.78.

The two dimensions had to be split into their respective components before they could be combined to produce the four environment types or conditions of perceived environmental uncertainty. Respondent means for the indices of the two dimensions approximated the normal distribution curve. Therefore, the median was used as the splitting point. If a respondent scored below the median on the measures of both dimensions, his environment was said to be simple-static. If he scored above the median on the measures, his environment was labeled as complex-dynamic. If he scored above the median on the measure for the simple-complex dimension, but scored below the median on the measure for the static-dynamic dimension, his environment was stated to be complex-static. If the opposite was true, then his environment was called simple-dynamic.

Effect on PR Roles

According to Burns and Stalker, there are two types or systems of organizations. One is the mechanistic system, which generates routine and repetitive behaviors, and is suited for stable environments. The other is the organic system, which is flexible and therefore ideal for changing or dynamic environments.[10] When placed in conjunction with the assumption that organizations are no more than a system of roles and consist of individual acts and behaviors,[11] it follows that mechanistic behaviors are suited for stable environments, and organic behaviors for dynamic environments.

Mechanistic and organic behaviors are analogous to Spiro's notions of substantive and procedural power. Substantive power is authority based upon

an individual's inherent or learned qualities such as education, status, etc. Procedural power is based upon processes and procedures that individuals use to help resolve a decision situation.[12]

Based on an extensive analysis of the role models, Smith states that the expert prescriber and communication technician role models are substantive power behaviors, while the communication facilitator and problem-solving process facilitator models are procedural power behaviors.[13]

The communication technician model has been described as a "provision" model,[14] wherein the practitioner provides technical skills to help carry out a public relations program without attempting to define or solve problem situations. The skills include, "graphics, photography,...exhibit planning and production -- to mention but a few of the long list (of PR skills) sought by clients."[15] Since many of the decisions have already been made for the practitioner, his decision environment is limited to relatively few (simple) and enduring (stable and unchanging, or static) task and skill-oriented considerations. According to Selznich, an optimal strategy for coping with a routine situation is a simple tactic, or a low-level, localized decision.[16] Such a decision is intended, "more to pursue the technical improvement of means, rather than the accomplishment of the ends of the concern."[17] Therefore, it can be hypothesized that communication technician role behavior is governed by a simple-static environment.

In contrast, the expert prescriber is "the person with all the answers."[18] He assumes major responsibility for diagnosing a public relations problem and prescribing a solution to it. His environment can no longer be described as simple. Blake and Mouton suggest that the expert systematically applies past solutions to present problems. They also argue that the success of this role hinges upon recurring and predictable types of situations, in which known solutions have worked, and that the trained consultant (practitioner) realizes

this: "The greater the degree of control over the situation, the more successful the prescriptive intervention."[19] Such an environment can be defined in Duncan's terms as a complex and static environment.

A practitioner playing the role of communication facilitator mediates information between an organization and its publics through techniques such as surveys, interviews, etc. This, "mustering of information is what distinguishes public relations from publicity."[20]

The communication facilitator does not assume major responsibility for decision-making. The plan, "would be that of the staff member or group involved."[21] The practitioner merely helps, "widen (their) view of the situation by facilitating the gathering of new information, or by verifying existing data."[22] Thus, his role behavior is enacted in a dynamic, information-processing environment. This environment is also simple because it does not impose a major decision-making burden upon the practitioner.

The problem-solving process facilitator helps others in the organization who seek his help to confront, identify, understand, and solve <u>their</u> own problems by pushing them through a systematic problem-solving process. Specifically, he presents facts, counterarguments, and logic; challenges thinking regarding different solutions; and probes for motives and reasons underlying such thinking. By doing this, he hopes to help the others test their own objectivity, understand their own assumptions and values, and arrive at a clear and possibly different perspective on the problem.[23]

Evidently, such practitioner behavior is also taking place in a dynamic, information-processing environment. However, this environment is rendered complex because the practitioner, in pushing relevant others to rethink a problem, is forced to consider all possible environmental factors that have or can enter into the decision situation. Blake and Mouton say that "rich" situations that are difficult to unravel, facilitate use of a problem-solving intervention.[24]

Seven items each on a scale of (1) never, to (7) always were used to construct indices for the four dependent role models. Following are examples of the items, as well as the reliability coefficient of each index:

Expert prescriber	"I diagnose public relations problems and explain them to others in the organization." (Cronbach's alpha: 0.92)
Communication technician	"I handle the technical aspects of producing public relations materials." (Cronbach's alpha: 0.84)
Communication facilitator	"I keep management informed of public reaction to organizational policies, procedures, and/or actions." (Cronbach's alpha: 0.78)
Problem-solving process facilitator	"I keep management involved in every phase of the public relations program." (Cronbach's alpha: 0.90)

Hypotheses and Findings

Based on the theory in the preceding pages, Acharya proposed the following four hypotheses:

1. Public relations practitioners who perceive their decision environment to be simple-static (or the environment of least perceived uncertainty) are most likely to exhibit communication technician role behavior.

2. Public relations practitioners who perceive their decision environment to be complex-static are most likely to exhibit expert prescriber role behavior.

3. Public relations practitioners who perceive their decision environment to be simple-dynamic are most likely to exhibit communication facilitator role behavior.

4. Public relations practitioners who perceive their decision environment to be complex-dynamic (or the environment of most perceived uncertainty) are most likely to exhibit problem-solving process facilitator role behavior.

The statistical model employed was the F test. The variables of education and public relations experience were entered into the model as covariates. To test for specific differences indicated by the hypotheses, the t test was

performed on weighted means of the role models in the four environmental conditions of simple-static, complex-static, simple-dynamic, and complex-dynamic.

The F test showed the variable of perceived environmental uncertainty to have a significant main effect upon the means of the communication technician ($F=5.52$; $p \leq 0.05$) and problem-solving process facilitator ($F=4.17$; $p \leq 0.05$). When the t test was applied, the mean of the technician model in the simple-static environment was found to be significantly higher ($t=2.90$; $p \leq 0.05$) than the average of its means in the other three environments. Similarly, the mean of the problem-solving process facilitator in the complex-dynamic environment was found to be significantly higher ($t=2.80$; $p \leq 0.05$) than the average of its means in the remaining three environments. The data did not support predictions for the expert prescriber and communication facilitator models.

Method and Measurement

As in previous research on the relationship between perceived environmental uncertainty and public relations roles, this study uses data from a subset (n=229) of a national sample (n=458) of PR practitioners belonging to the membership of the Public Relations Society of America (PRSA).[25]

The objective of this study being an analysis of the structure of the perceived environmental uncertainty variable, the principal statistical model used was multiple discriminant analysis.

Multiple discriminant analysis itself may be interpreted as a special kind of factor analysis that extracts orthogonal factors from among items comprising the index of an independent variable for the specific task of displaying and capitalizing upon differences among criterion groups. Thus, components of the independent variable are derived that best separate subjects of a study into cells or groups. Not surprisingly, discriminant analysis works best in conditions where the predictor variable is continuous, and the dependent variable

is categorical.

For the independent variable, the set of 32 scaled items measuring the simple-complex and static-dynamic dimensions of environment was used. Each of the 32 items was sequentially entered into the discriminant model. A single item question was used to break down the study sample into the four role model categories:

> "Of the four roles, which one best describes your primary role (circle one) - (a) expert (b) technical services provider (communication technician) (c) communication process facilitator (communication facilitator) (d) problem-solving process facilitator?"

One could use the 28 scaled role items and collapse them into the role categories. The resultant categories would be biased towards the criterion used by the researcher for creating the categories, and reflect his concept of reality. On the other hand, though the single item measure used in this study suffers from uncertain reliability, it reflects a practitioner's concept of reality, and thus is appropriate for testing the validity of the perceived environmental uncertainty measure in the context of public relations.

Findings

Table 1 shows items from the indices of the simple-complex and static-dynamic dimensions that contribute most to discriminating between the role categories. The standardized discriminant coefficients associated with the items are rotated using a varimax criterion and are interpretable in a manner analogous to beta weights in a multiple regression analysis. Table 1 also shows the two significant functions ($p \leq 0.05$) that the coefficients load up on.

Table 1 about here

The two discriminant functions do not lend support to the operational construction of the simple-complex and static-dynamic dimensions. Rather, the

analysis takes items out of both indices for constructing the discriminant functions, which are like whole, new indices. Functions 1 and 2 explain 16 and 12 percent respectively of the variance among the role categories.

A spatial representation of Function 1 (Figure 1) shows that static-dynamic dimension items such as "governmental regulations" and "union officials" cluster at the negative end of the function along with simple-complex dimension items such as "environmental groups." At the positive end of the function are grouped simple-complex dimension items such as "society/local community," "staff employees," and "other managers."

Such a grouping of items prompts the belief that what may be operating here is some kind of threat/non-threat dimension. Practitioners seem to separate elements in their professional environments into those that are supportive of and beneficial to their organizations, such as management and fellow workers; and those that are potential threats, such as environmental groups and labor unions.

Function 1 also separates the expert and problem-solver role models from the communication technician and facilitator models (Table 1a).

Figure 1 about here

A spatial arrangement of Function 2 (Figure 2) confirms the presence of the static-dynamic dimension of environment by grouping factors such as "society/local community," change in "investors and creditors," "product technology," and "economic trends" at the negative end of the function, while placing "environmental groups" at the positive end of the function. This indicates that practitioners do perceive these factors along a change/no-change continuum, environmental and like groups being viewed as unchanging, perhaps dogmatic, while technologies change, and societies evolve.

Figure 2 about here

Function 2 separates the expert and communication facilitator role models from the communication technician and problem-solving process facilitator models (Table 1a).

When the two discriminant functions at the level of group means (Table 1a) are crossed, it becomes evident (Figure 3) that expert prescriber role behavior is associated with environments that are threatening and unstable; communication technician behavior with environments that are stable and non-threatening; communication facilitator behavior with environments that are dynamic, yet non-threatening; and problem-solving process facilitator behavior with environments that are threatening but static.

Figure 3 about here

The percentage of cases correctly grouped by the independent variable is 51 percent in a sample of 229.

Summary and Conclusions

In summary, the multiple discriminant analysis technique seems to unearth the hitherto hidden dimension of threat in the public relations practitioner's environment. The static-dynamic dimension, though altered by the analysis, appears to be valid for describing this environment. Practitioners do not seem to evaluate their environments along the simple-complex dimension.

PR practitioners increasingly are operating in a "pressure-cooker" environment. Their organizations, "are under siege from consumerists, environmentalists, women's liberation advocates, the civil rights movement, and other activist groups." The demands of these groups, "are being steadily translated into an unprecedented wave of intervention by federal and state governments into the affairs of business."[26] Thus, it is natural that the practitioners of public relations interpret their professional environments in terms of what is friendly and beneficial, and what is hostile and threatening; rather than in terms of simplicity and complexity.

As in the original theory, the communication technician and communication facilitator models are separated by the dynamic component of environment. However, the positions of the expert prescriber and problem-solving process facilitator models are reversed, the former now being associated with the environment of greatest perceived uncertainty. Indeed, Blake and Mouton report that the expert may be most effective when the client has reached the end of his tether; and also when action is imperative, and the client or other is unable to select options for resolving the situation.[27] The placement of the problem-solver in a threatening but static environment suggests that this mode of intervention may be preferred when there is time available to go through the process of collaboration and problem-solving.

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Table 1

Standardized Discriminant Function Coefficients

	Function 1	Function 2
Simple-complex dimension: "How often to you perceive each of the following to be relevant for and important to your decision-making?"		
Other managers	1.48	.10
Society/local community	.50	-2.00
Environmental groups	-.96	1.40
Staff/employees	1.26	-.37
Product technology	-.24	-1.04
Economic trends	.58	-.90
Static-dynamic dimension: "How often are the following factors susceptible to change?"		
Governmental regulations	-1.89	-.12
Society/community support	-.08	.56
Investors/creditors	-.06	-1.35
Union officials	-1.16	.80
Eigenvalue	.16	.12
Cannonical Correlation	.37 ($p \leq 0.05$)	.33 ($p \leq 0.05$)
Percent of Variance	16	12

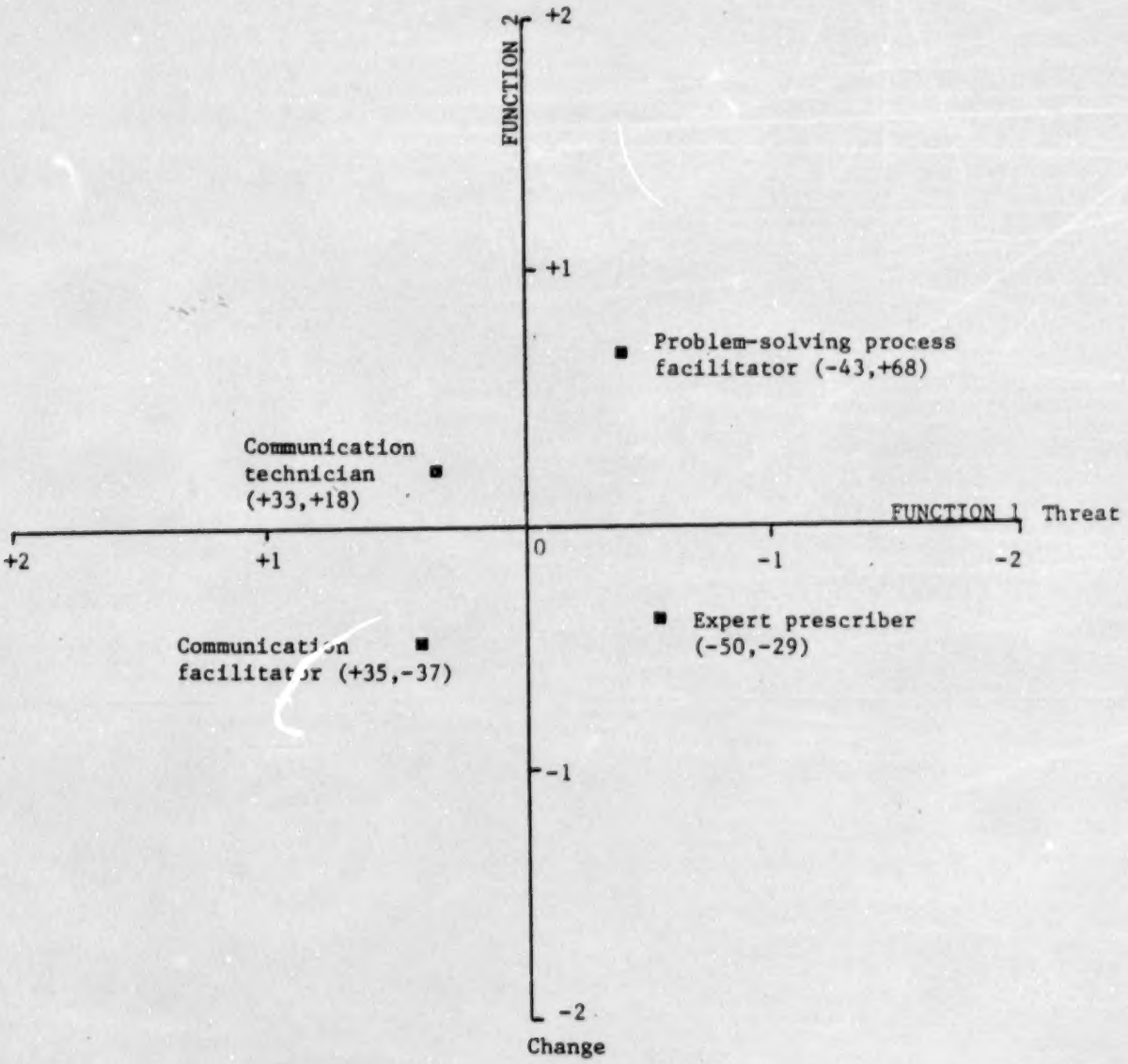
Table 1a

Discriminant Functions Evaluated at Group Means

	Function 1	Function 2
Expert prescriber	-.50	-.29
Communication technician	.33	.18
Communication facilitator	.35	-.37
Problem-solving process facilitator	-.43	.68

Figure 3

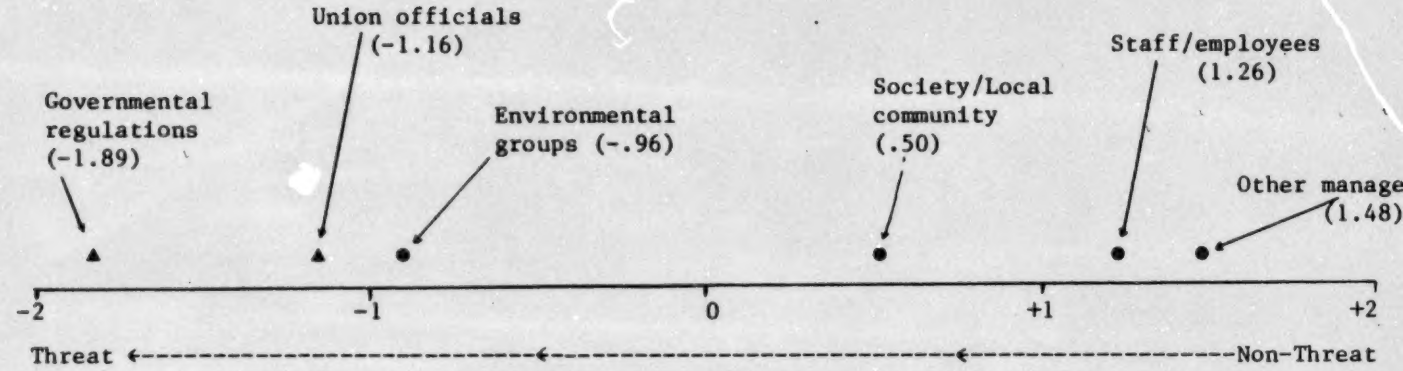
Role Model Group Means on Discriminant Functions 1 and 2



N=229
Percent of correctly grouped cases=51%

Figure 1

Spatial Representation of Coefficients on Discriminant Function 1

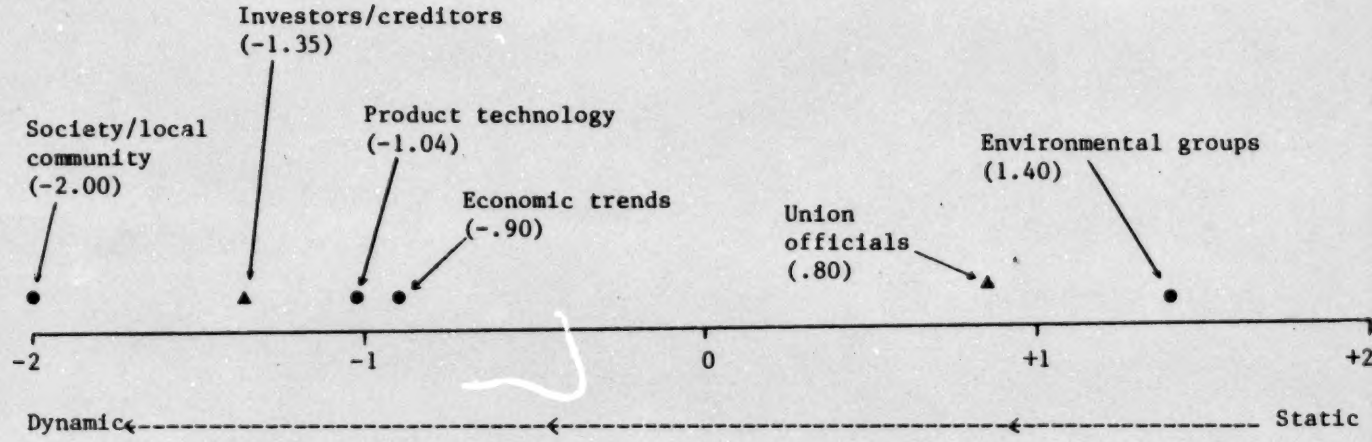


▲ = Items from the index of the static-dynamic dimension

● = Items from the index of the simple-complex dimension

Figure 2

Spatial Representation of Coefficients on Discriminant Function 2



▲ = Items from the index of the static-dynamic dimension

● = Items from the index of the simple-complex dimension